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## (54) WAVEGUIDE TYPE SPOT SIZE CONVERTING ELEMENT

## (57)Abstract:

**PURPOSE:** To improve the conversion efficiency by using a multimode optical waveguide for spot size conversion and using the mode conversion effect and most suitably setting the length of the multimode optical waveguide.

**CONSTITUTION:** At least a first optical waveguide 3 where the spot size of guided light is small, a second optical waveguide 5 where the spot size of guided light is large, and an optical waveguide 4 for spot size conversion which connects these optical waveguides and converts the spot size are provided. In this case, width  $W$  and thickness  $D$  of a core 4 of the optical waveguide for spot size conversion are set to very large values. The multimode optical waveguide is used as the optical waveguide 4 for spot size conversion, and the length of the multimode optical waveguide 4 is so set that the spot size of guided light which is made incident from the first optical waveguide 3 and is propagated is expanded by the mode conversion effect in the multimode optical waveguide.

